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L4: Entry 1 of 2

File: USPT

Jan 25, 2005

DOCUMENT-IDENTIFIER: US 6847974 B2

TITLE: Method and apparatus for intelligent data assimilation

Brief Summary Text (21):

In another aspect of the invention, a data processing system adapted to access a data provider via a communications link includes a parser adaptor operably coupled to a software object. A parser semantic description of the data set and a semantic object semantic description is provided for use by the parser adaptor. The parser adaptor generates extracted data from the data set using the parser semantic description. The parser adaptor then generates a semantic object using the extracted data according to the semantic object semantic description.

Brief Summary Text (22):

In another aspect of the invention, a data processing system adapted to access a data provider via a communications link includes a request builder operably coupled to a software object. A native object is operably coupled to the request builder with the native object encapsulating implementation details of a data request for the data provider. A native semantic description is provided including ontology information describing a data structure used by the request builder to build a data request for the data provider. The request builder transmits to the native object a search request and the native object generates a data request from the search request using the native semantic description.

Detailed Description Text (22):

An ontology includes a vocabulary of terms and a specification of what those terms mean. The intelligent data assimilation system ontology provides a set of well-founded constructs that are used to build meaningful higher-level knowledge. Basic terms in the intelligent data assimilation system ontology are selected such that basic foundational concepts and distinctions are defined and specified. The basic terms chosen form a complete set, whose relationship to one another is defined using formal techniques. These formally defined relationships provide the semantic basis for the terminology chosen. It is these relationships included in the intelligent data assimilation system ontology that enables the expression of domain-specific knowledge without including domain-specific terms.

Detailed Description Text (41):

FIG. 5 is a diagram depicting an exemplary embodiment of an ontological relationship between semantic constructs and their associated LSOs in an ontology according to the present invention. The exemplary embodiment depicts a legal entity class 200 with two children classes, person 218 and corporation 202. Each of these classes includes a child class encapsulating the concept of where an instantiation of the legal entity class may live as defined for legal purposes. In the case of the person class, the appropriate class is the domicile class 220 and for the corporation the appropriate class is the corporate address class 204. The classes street address 212, city 210, Zip Code 208, and state 206 have multiple parents through multiple inheritance, namely the domicile and corporate address class.

Detailed Description Text (45):

In another example, exemplary service class, Service 2224, encapsulates a query "Where can ABC corporation (a legal entity) be served?". An instantiation of the Service 2 class results in a traversal of the ontological relationships from legal entity 200, to corporation 202, to corporate address 220, to street 212 using method 2216, to city 210, to Zip Code, 208, and to state 206. This traversal is shown as a broken line surrounding the appropriate objects.

Detailed Description Text (67):

The intelligent data assimilation system allows for additional filtering of a data set once the data has been assimilated. For example, optional "opt-out" rules may be applied to the merged results allowing individuals or entities to exclude personal information from the data set that the individuals or entities do not wish disseminated. An opt-out rule is an internal rule that stops certain information from being released to a service object in response to a data request. In one embodiment of a workflow according to the present invention, the results are returned to the service request handler 608 at the end of the workflow process in the case of an instant search. In an instant search, the data client transmits a search request with the expectation of receiving a search response within a short period of time during which the data client remains coupled to the intelligent data assimilation system. In another embodiment of a search request according to the present invention, the data client transmits a search request with the expectation of returning to the intelligent data assimilation system to retrieve the search results at a latter time.

Current US Original Classification (1):707/101

CLAIMS:

1. A method of fulfilling a data service request, the method comprising: providing an ontology description of a data service, wherein the ontology description of the data service comprises a semantic description of atomic objects associated with the data service; providing a first workflow; providing a plurality of logical search objects operably coupled via a respective one of a plurality of communications links to a respective one of a plurality of data providers and operably coupled to the first workflow; transmitting by the logical search objects to the data providers via the communications links a plurality of search requests, the search requests generated by the first workflow from the data service request; receiving by the logical search objects from the data providers via the communications link a plurality of data sets in response to the search requests; transmitting by the logical search objects to the first workflow the data sets; and generating by the first workflow a knowledge instance from the data sets using the ontology description of the data service.

18. A method for accessing by a software object a data provider via a communications link, comprising: receiving by the software object from a second software object a search request message document; generating by the software object a data request for the data provider from the search request message document; transmitting by the software object to the data provider the data request via the communications link; receiving by the software object from the data provider a data set via the communications link; and generating by the software object a semantic object from the data set, including: providing a parser adaptor operably coupled to the software object; providing a parser semantic description of the data set for use by the parser adaptor; providing a semantic object semantic description; generating by the parser adaptor extracted data from the data set using the parser semantic description; and generating by the parser adaptor the semantic object using the extracted data according to the semantic object semantic description.

19. A method for accessing by a software object a data provider via a communications link, comprising: receiving by the software object from a second software object a search request message document; generating by the software object a data request for the data provider from the search request message document, including: providing a request builder operably coupled to the software object; providing a native object operably coupled to the request builder, the native object encapsulating implementation details of a data request for the data provider; providing a native semantic description including ontology information describing a data structure used by the request builder to build the data request for the data provider; transmitting by the request builder to the native object the search request; and generating by the native object the data request from the search request using the native semantic description; transmitting by the software object to the data provider the data request via the communications link; receiving by the software object from the data provider a data set via the communications link; and generating by the software object a semantic object from the data set.

20. A data processing object system adapted to fulfill a data service request, comprising: a processor; and a memory operably coupled to the processor and having program instructions stored therein, the processor being operable to execute the program instructions, the program instructions including: providing an ontology description of a data service, wherein the ontology description of the data service comprises a semantic description of atomic objects associated with the data service; providing a first workflow; providing a plurality of logical search objects operably coupled via a respective one of a plurality of communications links to a respective one of a plurality of data providers and operably coupled to the first workflow; transmitting by the logical data providers via the communications links a plurality of search requests, the search requests generated by the first workflow from the data service search objects to the description request; receiving by the logical search objects from the data providers via the communications link a plurality of data sets in response to the search requests; transmitting by the logical search objects to the first workflow the data sets; and generating by the first workflow a knowledge instance from the data sets using the ontology description of the data service.

37. A data processing system adapted to access a data provider via a communications link, comprising: a processor; and a memory operably coupled to the processor and having program instructions stored therein, the processor being operable to execute the program instructions, the program instructions including: receiving by a software object a search request message document; generating by the software object a data request for the data provider from the search request message document; transmitting by the software object to the data provider the data request via the communications link; receiving by the software object from the data provider a data set via the communications link; and generating by the software object a semantic object from the data set, including: providing a parser adaptor operably coupled to the software object; providing a parser semantic description of the data set for use by the parser adaptor; providing a semantic object semantic description; generating by the parser adaptor extracted data, from the data set using the parser semantic description; and generating by the parser adaptor the semantic object using the extracted data according to the semantic object semantic description.

38. A data processing system adapted to access a data provider via a communications link, comprising: a processor; and a memory operably coupled to the processor and having program instructions stored therein, the processor being operable to execute the program instructions, the program instructions including: receiving by a software object a search request message document; generating by the software object a data request for the data provider from the search request message document, including: providing a request builder operably coupled to the software object; providing a native object operably coupled to the request builder, the native object encapsulating implementation details of a data request for the data provider; providing a native semantic description including ontology information describing a data structure used by the request builder to build the data request for the data provider; transmitting by the request builder to the native object the search request; and generating by the native object the data request from the search request using the native semantic description; transmitting by the software object to the data provider the data request via the communications link; receiving by the software object from the data provider a data set via the communications link; and generating by the software object a semantic object from the data set.

39. A computer readable media embodying program instructions for execution by a computer, the computer program instructions adapting a computer to fulfill a data service request, the program instructions comprising: providing an ontology description of a data service, wherein the ontology description of the data service comprises a semantic description of atomic objects associated with the data service; providing a first workflow; providing a plurality of logical search object a operably coupled via a respective one of a plurality of communications links to a respective one of a plurality of data providers and operably coupled to the first workflow; transmitting by the logical search objects to the data providers via the communications links a plurality of search requests the search requests generated by the first workflow from the data service request; receiving by the logical search objects from the data providers via the communications link a plurality of data sets in response to the search requests; transmitting by the logical search objects to the first workflow the data sets; and generating by first

workflow a knowledge instance from the data sets using the ontology description of the service.

56. A computer readable media embodying program instructions for execution by a computer, the computer program instructions adapting a computer to access a data provider via a communications link, the program instructions comprising: receiving by a software object a search request message document; generating by the software object a data request for the data provider from the search request message document; transmitting by the software object to the data provider the data request via the communications link; receiving by the software object from the data provider a data set via the communications link; and generating by the software object a semantic object from the data set, including: providing a parser adaptor operably coupled to the software object; providing a parser semantic description of the data set for use by the parser adaptor; providing a semantic object semantic description; generating by the parser adaptor extracted data from the data set using the parser semantic description; and generating by the parser adaptor the semantic object using the extracted data according to the semantic object semantic description.

57. A computer readable media embodying program instructions for execution by a computer, the computer program instructions adapting a computer to access a data provider via a communications link, the program instructions comprising: receiving by a software object a search request message document; generating by the software object a data request for the data provider from the search request message document; providing a request builder operably coupled to the software object; providing a native object operably coupled to the request builder, the native object encapsulating implementation details of a data request for the data provider; providing a native semantic description including ontology information describing a data structure used by the request builder to build the data request for the data provider; transmitting by the request builder to the native object the search request; and generating by the native object the data request from the search request using the native semantic description. transmitting by the software object to the data provider the data request via the communications link; receiving by the software object from the data provider a data set via the communications link; and generating by the software object a semantic object from the data set.

58. A method of building a knowledge instance for a data service, comprising: providing a plurality of logical search objects, each logical search object operable to retrieve a data set from one or more data providers; instantiating by a first workflow one or more logical search objects selected from the plurality of logical search objects; receiving by the one or more logical search objects data sets from the one or more data providers; transmitting by the one or more logical search objects to the workflow the data sets; and generating by the workflow the knowledge instance from the data sets using an ontology description of a data service, wherein the ontology description of the data service comprises a semantic description of atomic objects associated with the data service.

73. A data processing system adapted to build a knowledge instance for a data service, comprising: a processor; and a memory operably coupled to the processor and having program instructions stored therein, the processor being operable to execute the program instructions, the program instructions including: providing a plurality of logical search objects, each logical search object operable to retrieve a data set from one or more data providers; instantiating by a first workflow one or more logical search objects selected from the plurality of logical search objects; receiving by the one or more logical search objects data sets from the one or more data providers; transmitting by the one or more logical search objects to the workflow the data sets; and generating by the workflow the knowledge instance from the data sets using an ontology description of a data service, wherein the ontology description of the data service comprises a semantic description of atomic objects associated with the data service.

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